ALPHA

GEOTECHNICAL ENGINEERING, ENVIRONMENTAL CONSULTING, AND CONSTRUCTION MATERIALS QC/QA

LIMITED SITE ASSESSMENT REPORT

CHEROKEE MINI-MART

1340 TSALI BOULEVARD
CHEROKEE, NC 28719
Swain County

Facility ID # 00-0-0000023317

Prepared For:

Mr. David Ferguson
1192 Tsali Boulevard
Cherokee, NC 28719

NC DENR - Division of Waste Management - UST Section
Asheville Regional Office
2090 US Highway 70
Swannanoa, NC 28778

Prepared By:

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November X, 2015
AES Project # 15.202.01 UT

A. SITE INFORMATION

1. Site Identification

Date of Report: X/XX/X
Site Name: Cherokee Mini-Mart
Site Street Address: 1340 Tsali Boulevard
City/Town: Cherokee, NC Zip Code: 28719 County: Swain
Description of Geographical Data Point: Current Retail Petroleum Store
Location Method: Google Earth
Latitude: 35°29'46.85" N Longitude: 83°18'47.02" W

2. Information about Contacts Associated with the UST System

UST Owner: Newfound Lodge, LTD-DBA
Address: 1192 Tsali Blvd., Cherokee, NC 28719
Property Owner: David Ferguson
Address: 1192 Tsali Blvd., Cherokee, NC 28719
Phone: 828-736-3200
Consultant/Contractor: Alpha Environmental Sciences, Inc.
Address: P.O. Box 2155, Asheville, NC 28802
Phone: 828-398-2040, Fax: 828-398-2041
Analytical Laboratory: Pace Analytical Services, Inc. State Certification No.: 40
Address: 9800 Kincey Ave., Suite 100, Huntersville, NC 28078
Phone: 704-875-9092

3. Information about Release

Date Discovered: 4/7/2015
Estimated Quantity of Release: Unknown
Cause of Release: Hole in diesel tank
Source of Release: 4,000 gallon diesel UST
Size and Contents of the UST System from which the Release Occurred: Two (2) 8,000 gallon gasoline USTs, one (1) 4,000 gallon gasoline UST, and one (1) 4,000 gallon diesel UST.

4. Certification

I, Roger D. Moore, P.G., a Licensed Geologist for Alpha Environmental Sciences, Inc., do certify that the information contained in this report is correct and accurate to the best of my knowledge.

_____
Roger D. Moore, P.G., P.E.
NC PG Registration No. 1107

B. EXECUTIVE SUMMARY

1. Source Information

The source of the release appears to be from the two 1,000 gallon kerosene USTs located to the west of the store as well as from two of the gasoline dispensers located in front of the store. An unknown amount of kerosene and gasoline was released at these locations. A release was discovered on April 2, 2015 during closure activities.

2. Initial Abatement/Closure Activities

All tanks, dispensers, dispenser lines and contaminated soil were removed and disposed of by Mountain Environmental Services, Inc. Free product was not detected during removal of the tanks, dispensers and piping. Groundwater was not encountered during excavation activities. Bedrock was also not encountered during excavation activities.

3. Assessment

Twenty seven initial soil samples were collected from the areas of the former gasoline USTs, the former kerosene USTs and the former piping and gasoline dispenser areas following the removal of the UST system. Sixteen follow up samples were collected from the former kerosene UST excavation and from two of the former dispenser locations following over excavation of these areas due to detected contamination. All contaminated soil was removed during over excavation activities.

4. Risk Assessment/Soil Cleanup Level

The surrounding property is mainly residential/water frontage with the nearest surface water being Shooting Creek located approximately 300 feet to the east of the site and approximately 525 feet to the south of the site. A surrounding well survey has not been performed. Contaminant levels in the soil are being compared to the soil to groundwater and residential MSCC (Maximum Soil Contaminant Concentration) levels.

C. TABLE OF CONTENTS

D. Site History and Characterization

1. Ownership of the UST System – See A-2 above.

2. UST System Information – Two (2) 8,000 gallon gasoline USTs, one (1) 4,000 gallon gasoline UST, and one (1) 4,000 gallon diesel UST. A release was discovered during removal of the tanks, dispensers and associated piping.

   Prior to the release reported on April 7, 2015, the above UST System consisted of single walled steel-construction tanks, which were installed during the mid-1980s. The tank dimensions for the 4,000 gallon and 8,000 gallon tanks were 5-ft 4-in by 24-ft, and 8-ft by 21-ft 4-in respectively.

   During emergency response activities, the above tanks were replaced by an upgraded system that was fully functional by July 3rd, 2015. The upgraded system consisted of (1) 12,000 gallon Doublewall Glassteel II gasoline UST (8-ft by 32-ft 5-in), and (1) 12,000 gallon 2-compartment (4,000 gallon gasoline/8,000 gallon diesel) Doublewall Glassteel II UST (8-ft by 27-ft).

3. Non-UST Information - There have been no known ASTs or other sources of petroleum at the site. What about the storage capacity of the generator?

4. Description of Release – The release was first identified by the Eastern Band of Cherokee Indians (ECBI) and reported to the Environmental Protection Agency (EPA) on April 3, 2015. The North Carolina Department of Environment and Natural Resources (NCDENR) was notified in a 24-Hour Release and UST Leak Reporting Form (form UST-61, see Appendix A) on April 7, 2015. Free product, reportedly diesel fuel from the Cherokee Mini-Mart, was observed flowing into the Oconaluftee River (adjacent to the east side of the subject site). The release was assigned incident # 41325 and the amount of the release is currently unknown.

5. Site Characteristics – There are no other known historical releases associated with the site. The site is a commercial property of approximately 0.30 acres mainly covered with asphalt and concrete pavement and having a single story building of approximately 3,600 square feet. The property is currently owned by Mr. David Ferguson and is presently in use. Retail shops border the property to the north, and The Pink Motel borders the property to the south. There is a restaurant to the west of the site – across Tsali Boulevard.

The property sits on relatively flat terrain (river valley) and is underlain by fill material and ancient riverbed (gravel and cobble). Bedrock exposures have been observed on the west side of Tsali Boulevard (across street from site) and in the Oconaluftee River, but the nature of bedrock in the subsurface has not been established. The depth to groundwater has been observed approximately 13-feet below grade surface (BGS) and flow direction is generally to the southeast.

6. Initial Response and Abatement Activities – Singleton Environmental, Inc. was the initial consultant who provided oversight of the initial response and abatement action for the owner/operator of Cherokee Mini-Mart. Alpha Environmental, Inc. took over project responsibilities on August 14, 2015 after the initial response/abatement activities had been completed. Singleton Environmental, Inc. did not submit any type of formal report (i.e. Initial Abatement Action Report) to the owner/operator or NCDENR documenting the response, abatement, and UST closure activities that took place at the site from April 3rd to August 14, 2015. Appendix A, contains the relevant forms, laboratory reports, and invoices associated with the Spring/Summer 2015 response and abatement activities. The info provided in Appendix A along with interviews from the owner/operator, EBCI and EPA were used to construct the timeline below:

Initial Response

On April 3, 2015, the EBCI responded to a reported possible fuel leak/spill at the location of the Pink Motel and Newfound Lodge, near the Cherokee Mini-Mart – fuel entering the Oconaluftee River along its western bank. The EBCI then notified EPA (region 4) about the petroleum spill near the Cherokee Mini-Mart. From April 7 to April 9, 2015, form UST-61 (24-Hour Release and UST Leak Reporting Form) was submitted to NCDENR for the release of diesel fuel, members from ECBI and the EPA collected soil and water samples from the Oconaluftee River, free product recovery and spill containment began, and pressure/vacuum testing was conducted on the 4,000 gallon diesel UST (located on Cherokee Mini-Mart property).

The EBCI collected water samples from the Oconaluftee River and trenches/pits along the western bank on April 7, 8, and 9, 2015 and submitted them to Pace Analytical, Asheville, NC, for gasoline range organics and diesel range organics (GRO/DRO) analyses. Several of these samples resulted in exceedances of both GRO and DRO. On April 9, 2015, representatives of the EPA (region 4) collected five total samples of soil or water along the Oconaluftee River (along the banks and from trenches/pits along western bank of river). These samples were analyzed for benzene, toluene, ethyl-benzene, and xylenes (BTEX) at EPA's region 4, Science and Ecosytem Support Division (SESD) laboratory, Athens, Georgia. Every sample collected resulted in detection of one or more of the BTEX compounds. The EPA's sampling report is located in Appendix A of this LSA Report.

On April 7, 2015, NEO Corp., Canton, NC, initiated emergency response services at the Cherokee Mini-Mart (along the banks of the Oconaluftee River) at the direction of Mr. Forrest Parker and Mrs. Molly Grant with the EBCI. Emergency response services included spill containment using absorbent booms and pads and free product recovery utilizing vac-trucks. Trenches and pits were excavated along the western bank of the river in order to limit fuel discharge into the river, and to create an area of slow moving water for vacuum collection of contaminated surface water. NEO Corp. continued these response activities through April 19, 2015 (Mountain Environmental took over on April 22, 2015). During this time, NEO Corp. removed approximately 28,330 gallons of petroleum impacted surface water from the site for off-site disposal – see invoices/manifests in Appendix A.

On April 8, 2015, Precision Tank Services, Inc., Cornelius, NC, conducted pressure/vacuum testing on the 4,000 gallon diesel UST at the Cherokee Mini-Mart. The diesel tank failed both the pressure and vacuum tests.

UST Closure and Boom Maintenance

As free product recovery activities continued along the western bank of the Oconaluftee River, UST closure activities commenced in late June 2015.

From June 22 to 26, 2015, Singleton Environmental, Inc. provided oversight of the UST closure activities at the Cherokee Mini-Mart. All four tanks associated with the fueling system were removed along with 612-tons of petroleum contaminated soil. Anecdotal evidence from owner/operator, EBCI Enviornmental Compliance Officer, and EPA officials suggests that there was a “BB-sized” hole in the bottom of the 4,000 gallon diesel UST. Confirmation samples were collected and sent to Accutest Laboratories Southeast, Inc., Dayton, NJ. Twelve floor samples were collected beneath the USTs and seven samples were collected from the west, north, and east sidewalls of the UST excavation. During the UST closure work, sidewall samples were not submitted to the laboratory from the south sidewall (down-gradient sidewall). Analysis of the floor samples resulted in elevated concentrations of total petroleum hydrocarbons (TPHs) in all twelve samples. The sidewall samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and extractable petroleum hydrocarbons/volatile petroleum hydrocarbons (EPH/VPH). Laboratory results indicated that all the sidewall samples were non-detect, or at/near the reporting limits of Accutest Inc. Laboratories. Documentation of the UST closure activities is limited to closure forms submitted to EPA region 4 and NCDENR, and a 1 page scan from a field logbook showing the locations of the floor and sidewall samples mentioned above. The form entitled, Notice of Intent to Permanently Close Underground Storage Tank System(s) in Indian Country (EPA), form UST-2 (NCDENR), and the logbook scan along with the Accutest laboratory report is included in Appendix A of this LSA Report.

A new UST system was installed at Cherokee Mini-Mart from June 25 to July 3, 2015. OEC Petroleum Systems Inc., Spartanburg, SC, performed the installation of the new UST system and the Cherokee Mini-Mart reopened for business on July 4, 2015.

On June 22, 2015, Mountain Environmental, Inc. took over free product recovery and containment responsibilities at the Cherokee Mini-Mart site. Mountain Environmental conducted three final vac-truck removal events on April 22, 27, and 29, 2015 for a total of 10,500 gallons taken off-site for disposal. They also provided 24-hour surveillance and boom maintenance (absorbent booms and pads) until July 22, 2015. From that point forward, Mountain Environmental provided daily boom maintenance through the end of September 2015. There has been no evidence of fuel entering the recovery trench along the Oconaluftee since October 1, 2015. River surveillance and boom maintenance activities were suspended in late-October; at which time the owner/operator began monitoring the trenches daily for evidence of free product. Empty drums, and fresh supplies of absorbent pads/booms are currently being stored onsite as a contingency in the event of further release of fuel into the recovery trenches/pits along the river.

E. Risk Characterization Questionnaire
Part I – Groundwater/Surface Water/Vapor Impacts
High Risk

1. Has the release contaminated any water supply well including any well used for non-drinking purposes?

   NO

2. Is a water supply well used for drinking water located within 1,000 feet of the source area of the release?

   NO

3. Is a water supply well not used for drinking water located within 250 feet of the source area of the release?

   NO

4. Does groundwater within 500 feet of the source area of the release have the potential for future use?

   NO – The area surrounding the subject site (1,500 feet radius) is on city water – See Figure 5.

5. Do vapors from the release pose a threat of explosion because of accumulation of the vapors in a confined space or pose any other serious threat to public health, public safety or the environment?

   YES – Free product in MW-2 is located approximately 25 feet from motel room # (Pink Motel), and poses a potential risk of indoor vapor intrustion.

6. Are there any other factors that would cause the release to pose an imminent danger to public health, public safety, or the environment?

   YES – Given that free product has been observed in MW-2 (down-gradient of source area), there is potential of future releases to the Oconaluftee River.

Intermediate Risk

7. Is a surface water body located within 500 feet of the source are of the release?

   YES – Oconaluftee River is approximately 110 feet east of UST-tank farm.

   Does the maximum groundwater contaminant concentration exceed the surface water quality standards and criteria found in 15A NCAC 2B .0200 by a factor of 10?

   YES – Given that the Oconaluftee River is designated as Trout Waters, the Benzene concentration in groundwater sample MW-1 (22.2 µg/L) exceeds the most stringent 15A NCAC 2B .0200 criteria (1.19µg/L) by a factor of ten – see Table 4 or Figure 3.

8. Is the source area of the release located within a approved or planned wellhead protection area as defined in 42 USC 300h-7(e)?

   NO – The subject site is located within a commercially zoned, urban area.

9. Is the release located in the Coastal Plain physiographic region as designated on a map entitled, “Geology of North Carolina” published by the Department in 1985?

   NO

10. Do the levels of groundwater contamination for any contaminant exceed the gross contamination levels established by the Department?

    NO

Part II – Land Use

Property Containing Source Area of Release

1. Does the property contain one or more primary or secondary residences (permanent or temporary)?

   YES – The property contains the Pink Motel (approximately 30 feet from the suspected source area).

2. Does the property contain a school, daycare center, hospital, playground, park, recreation are, church, nursing home, or other place of public assembly?

   YES - The Pink Hotel is south and adjacent to the subject site.

3. Does the property contain a commercial or industrial enterprise, an inactive commercial or industrial enterprise, or is the land undeveloped?

   YES - The property functions as a commercial retail-petroleum store, and is surrounded by numerous commercial enterprises.

4. Do children visit the property?

   YES - The subject site is open to all potential consumers. Also, the Pink Motel (~30 feet southeast of suspected source area) is open to and has several access points to the Oconaluftee River.

5. Do pavement, buildings, or other structures cap the contaminated soil?

   YES - Pavement does cap soil in immediate vicinity of the reported release area (tank farm). However, the extent of soil contamination has not yet been determined, and contaminated soil does persist (offsite) along the riverbank to the southeast of the subject site.

   Free product observation and recovery efforts are currently ongoing along the Oconaluftee River (southeast of the subject site). Signs are posted to, “Keep Out” of the area and caution tape surrounds the perimeter. It is foreseeable that the subject property will continue to operate as a commercial retail petroleum store and the site will continue to be covered with pavement.

6. What is the zoning status of the property?

   Commercial

7. Is the use of the property likely to change in the next 20 years?

NO

Property Surrounding Source Area of Release

1. What is the distance from the source area of the release to the nearest primary or secondary residence (permanent or temporary)?

   There are no known residentially zoned homes within 1,500 feet of the suspected source area. However, the subject site is surrounded by motels/hotels. The Pink Motel is approximately 30 feet southeast of the suspected release area.

2. What is the distance from the source area of the release to the nearest school, daycare center, hospital, playground, park, recreation are, church, nursing home or other place of public assembly?

   Other than the above-mentioned motels/hotels, Our Lady of Guadalupe Church is located approximately 1,030 feet south of the subject site (see Table 5 and Figure 4 for additional places of assembly).

3. What is zoning status of properties in the surrounding area?

   Commercial

4. Briefly characterize the use and activities of the land in the surrounding area.

   Commercial properties contiguous to the subject site include: motels/hotels, craft-shops, restaurants associated with heavy tourist traffic from spring through fall.

F. Receptor Information

The potential receptors listed below have been categorized in Table 5 and plotted on a potential receptor map, Figure 4. A discussion for applicable items is provided below.

1. Water Supply Wells – not applicable

2. Public Water Supplies – Although the water supply servicing Cherokee, NC falls outside of the requisite 1,500 feet radius-receptor area, it is still included in Table 5 and Figure 4 of this report. The pump intake for the water supply is approximately 1,700 feet north of the subject site. The pump retrieves water from the Oconaluftee River where it is collected at the near-by Cherokee Tribal Water Treatment Plant. The water from this supply is used for drinking water,

agriculture, and to assist in operation of the Cherokee Water/Sewer department.

3. Surface Water – The subject site lies on the western bank of the Oconaluftee River. Pursuant to North Carolina's surface water quality standards (15A NCAC 02B.0101), the Oconaluftee has been classified with C (recreation/fish consumption), WS (water supply), and TR (trout waters) designations. Other surface water features include Lambert Branch, and an un-named surface water feature approximately 1,080 feet south of the site. Each makes their confluence with the Oconaluftee approximately 1,200 feet south of the suspected source area. Lambert Branch has been classified with the C surface water quality designation. The un-named surface water feature has not been classified with a water quality standard.

4. Wellhead Protection Areas – (not applicable) As stated above, Cherokee receives it's water supply from the Oconaluftee River. The suspected source area is not located within a designated wellhead protection area.

5. Deep Aquifers in the Coastal Plain Physiographic Region – not applicable

6. Subsurface Structures – Currently, the main subsurface utilities that have been identified, and are located within the 1,500 foot potential receptor area are water and sewer (Figure 4). During utility location at the subject site, communication lines were identified to run along the sidewalk west of the site (Figure 2). It is presumed that communication lines are laid out similar to the water/sewer utilities throughout the 1,500 foot receptor area. Collaboration with the EBCI Operations Division GIS/Engineering department is on-going and any new subsurface features (vaults, drain fields, etc.) identified will be updated and amended to this LSA and/or subsequent reports.

G. Land Use

Property owners/occupants contiguous to and down gradient of the suspected source area, and sensitive land use areas, located within 1,500 feet, have been listed in Table 5 and plotted on Figure 4.

H. Site Geology and Hydrogeology

The site is underlain by urban land complex soil, defined by U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS) as paved areas, or areas of disturbed land – commonly referred to as fill. The urban soil beneath the subject site consists of fine to medium grained silty sand. Prehistoric alluvial channel (ancient riverbed) deposits sit immediately below the urban land complex soils. The alluvial deposits primarily consist of variably sized cobble, gravel, and sand.

Cherokee lies within the Blue Ridge Geologic Province and bedrock exposures in close proximity to the site consist primarily of quartzose and biotite gneiss with high granitoid compositions. Field observations indicate that these exposures are highly jointed vertically and horizontally. The depth to bedrock below the subject site is currently unknown.

The Cherokee Mini-Mart is located within the Oconaluftee River drainage channel. Surface runoff at the site is primarily controlled by paved surfaces and drainage catch basins which discharge to the river via 12-inch steel corrugated piping. Monitoring wells installed at the site typically encountered saturated materials at depths from 10 to 13 feet BGS. Groundwater flow direction is generally to the southeast. Groundwater elevation data and inferred groundwater contours can be found in Table 6A and Figure 3, respectively.

I. Phase I/II Sampling Results

The LSA was comprised of a combined phase I/II approach. Drilling activities took place on September 23 and 24, 2015. The scope of work for this investigation included the collection of soil and groundwater samples for laboratory analysis. Soil was collected from two soil boring locations which were meant to fill the data gap (missing sidewall samples) associated with the UST closure activities that took place in June 2015. Soil and Groundwater samples were collected from one source, one upgradient, and two downgradient monitoring wells. Geologic Exploration (Geologic), Statesville, NC was contracted to provide drilling services. Geologic employed a DrillMax 2400 combination auger (4.25" ID) and air hammer (6" OD) to install the monitoring wells. A 2 foot long, 2 inch OD split spoon sampler (advanced by 140-lb hammer dropping 30 inches) was used for soil collection. This report includes a site map indicating the location of the soil borings, and monitoring wells in relation to the UST system and other site features (Figure 2). Appendix X contains field logbook notes (site lithology, soil screening, and well construction), site photographs, and sampling forms associated with monitoring well installation and sampling activities.

Laboratory analysis was performed by Pace Analytical Services, Asheville, NC. Laboratory reports are included in Appendix X of this LSA report.

Soil Sampling

The split spoon sampling technique used for soil collection was not completely effective in collection of continuous, undisturbed core samples at the Cherokee Mini-Mart site. During drilling activities, field observations indicated that soil samples collected after cobble had been encountered (~ 6 to 7 feet BGS), were likely not truly representative of subsurface soil conditions (see field log book) Cobble inhibited the advancement of the

split spoon sampler and potentially clogged the opening of the cutting shoe at the end of the hollow stem augers. Due to the difficulties with drilling in the cobble, collection of soil samples every 5 feet within the unsaturated zone (per NCDENR guidelines) was not possible. Samples were collected whenever sufficient soil recovery occurred. Soil samples were collected for the following laboratory analyses: VOCs, SVOCs, and Maine Department of Environmental Protection extractable petroleum hydrocarbons/volatile petroleum hydrocarbons (MADEP EPH/VPH).

Waiting to clarify Acetone detection and Benzene reporting limits. Otherwise, there were no detections above labs reporting limits.

Water Sampling

Well specifications – Monitoring wells were constructed of 2 inch schedule 40 poly-vinyl chloride (PVC) materials. The targeted screened interval was 10 to 20 feet BGS (0.010" slotted screen). During monitoring well installation, the groundwater table was observed at approximately 13 feet BGS. Diagrams illustrating the well construction of each well is found on pages 5-25 in the field logbook (Appendix X) and listed in Table 6A. The monitoring wells were developed on September 30, 2015. During the well development, free product was found in MW-2 (approximately 1 foot thickness). Accordingly, MW-2 was not development or sampled for laboratory analysis. Well development logs are included in Appendix X.

The monitoring wells (with exception of MW-2) were sampled on October 7, 2015. The bailer method was used to purge at least 3-well volumes and to collect groundwater for water quality measurements (pH, Conductivity, Temp, Turbidity, Total Dissolved Solids, Dissolved Oxygen, and Oxidation-Reduction Potential). Groundwater samples were delivered to Pace Analytical, Asheville, NC on October 8, 2015 (Chain of Custody records and laboratory reports are included in Appendix X).

The source well, nearest the UST excavation area, was MW-1. Groundwater analytical results for MW-1 indicated elevated concentrations of several VOCs and MADEP EPH/VPH constituents (Table 4 and Figure 3). In addition benzene (22.2 µg/l), naphthalene (19.6 µg/l), C_9-C_{18} aliphatics (1,458 µg/l), and C_9-C_{22} aromatics (935 µg/l) concentrations exceeded North Carolina Groundwater Quality Standards (NCAC 2L). There were fewer detections of the target analytes in the groundwater sample from MW-3. Total Xylenes were found above the laboratory reporting limits (13.4 µg/l), but below NC Groundwater Standards. The concentration of C_9-C_{18} aliphatic compounds in MW-3 exceeded NCAC 2L criteria (59.9 µg/l). There were no consituents of concern found in groundwater collected from MW-4, and MW-2 contained free product and was not sampled.

J. Free Product Monitoring and Recovery

Approximately 12 inces of diesel fuel free product (FP) was discovered in MW-2 during

well development activities on September 30, 2015 (see Photo Log in Appendix X). Since then, hand bailing/FP level checks have only been implemented when travel to the site was necessitated by other tasks required to complete the limited site assessment investigation. To date, approximately 1 gallon of FP has been collected from MW-2 (see Table 6B).

K. Conclusions and Recommendations

Summary

- No free product observed in recovery trenches since the end of September 2015 – boom system removed from riverbank. Contingencies in place in the event of future release.
- Soil data missing from UST closure activities (downgradient sidewall samples). and representative soil samples were difficult to obtain using hollow-stem auger and split spoon sampling technique.
- Soil sample results for LSA investigation indicate non-detect for all constituents of concern. (Acetone exception for sample MW1-01 – well below NCAC screening). However, representative soil samples were difficult to obtain from cobble-sized sediments (> 6 to 7'BGS) using hollow-stem auger and split spoon sampling technique.
- Upgradient well (MW-4) non-detect for all constituents of concern.
- 3 downgradent wells impacted with petroleum hydrocarbon consituents. MW-1 and MW-3 have concentrations above NCAC values, and MW-2 has ~1 foot FP.
- Groundwater flow to southeast

Recommendations

1. As priority, utilize vac-truck to recover, and potentially eliminate, product from MW-2. Then observe for several days after the vac-truck event to monitor free product/groundwater recharge at that location.

2. If approval of the LSA indicates that the site is a high or intermediate risk to human health and the environment, conduct a comprehensive site assessment (CSA) of the subject site. The CSA would include installation of additional monitoring wells (spaced on ~20 foot grid) at the site to examine extent of petroleum impacted soil and groundwater (would require different technology to acquire soil samples).

   The CSA report may also require:

   - Soil vapor sampling from inside Pink Motel (depends on site observations during drilling, and during water sampling results).
   - Hydrogeologic investigation: hydraulic gradient and GW flow direction, slug tests and calculations (hydraulic conductivity, transmissivity, and GW

velocity), and determination of rate of contaminant transport (modeling) and potential for contaminants to affect receptors.
- Compare GW-analytical to NC's surface water standards (include in modeling mentioned above).
- Collect surface water samples for laboratory analysis.

TABLES

FIGURES

APPENDICES

Appendix A

UST-3 Form

Appendix B

UST-2 Form

Appendix C

Certificate of UST Disposal

Appendix D

Soil Disposal Manifests

Appendix E

Chain of Custody Record

Appendix F

Laboratory Analytical Results